National Park Service
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Federal Lands Transportation Program
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The Swiftcurrent Bridge Replacement; Glacier National Park

By 2012, it was clear that the Swiftcurrent Bridge in Glacier National Park was rapidly losing its structural integrity. Bi-annual bridge inspection reports conducted since 2007 by the Federal Highway Administration (FHWA) had noted continued deterioration of the bridge, and recommended its replacement by 2017.

Spanning Swiftcurrent Creek at the outlet of Swiftcurrent Lake, the Swiftcurrent Bridge provides the only access to the Many Glacier Hotel for thousands of visitors each year, including vehicle and pedestrian traffic as well as horses used for concessioner-operated rides.

Initially the thought was to rehabilitate the historic bridge, which had been determined eligible for listing in

The Swiftcurrent Bridge following reconstruction (taken on July 26, 2016). Many elements of the new bridge design mimic those of the historic bridge. (NPS photo by Gary MacFadden)

the National Register of Historic Places, and was already a contributing factor to the Many Glacier Hotel Historic Area listing. But reports from FHWA-contracted studies in 2011 and 2012 found severe deterioration of the concrete deck and in the bridge abutments. The FHWA and NPS determined rehabilitation of the bridge was not a feasible alternative.

Other concerns were the severely deteriorated concrete curb and sidewalks, loose or missing stone masonry, and the not-to-code suspended utility conduits and multiple lines of flexible cable/wiring alongside the bridge's deck and encased within the sidewalks.

"This was a complex planning project," said Sena Wiley, the Intermountain Regional Transportation Division Chief. "We had to work through how to maintain the historic character of the original bridge, picking which point in history we would magnify, because it had evolved over time. And then we needed to determine how best to maintain the bridge once it was replaced."

Many of the Swiftcurrent Bridge's problems were tied to the annual spring breakup, when fragments of ice flowing off of the adjacent Swiftcurrent Lake would slam into or be trapped by the four interior piers, scouring and stressing the piers and abutments.

The Swiftcurrent Bridge was built in 1929-30 as part of a project to reconstruct the Babb-Many Glacier Road, providing access from Babb, Montana, to Glacier National Park's scenic Many Glacier Valley. The bridge was located 700 feet from the Many Glacier Hotel, among the most popular destinations in the park.

The historic Swiftcurrent Bridge in 1930. Note the four stone piers, which were deleted in the new design. (NPS photo.)

The plans for the original bridge were developed by the NPS Division of Landscape Architecture, and approved by Chief Landscape Architect Thomas Vint. Due to the location of the bridge and its impact on the landscape, the project underwent an unusual additional review by noted landscape architect Ferrucio Vitale, a member of the US Commission of Fine Arts, which typically reviewed only plans for monuments and memorials.

The reconstructed Swiftcurrent Bridge showing the new railing and the pedestrian walkway. (NPS photo by Gary MacFadden)

The completed structure reflected the NPS design philosophy of the period and blended well within the spectacular surroundings. The thin deck and metal railing lessened the bridge's potential appearance as being a dam at the lake outlet. The 75-foot long, five-span concrete deck bridge included four stone piers and two stone abutments.

Only two major improvements were made to the bridge over the years: in 1942, due to erosion from ice, the bridge's piers were reinforced with steel pins, a concrete veneer, and protective steel shields. And in 1958, the deck was paved and new concrete was laid over the walkway.

In developing its plans for the Swiftcurrent Bridge, the NPS developed two alternatives. Under a no-action alterative, the bridge would not be replaced and the structure would continue to deteriorate until access across the lake outlet could no longer be safely maintained.

Under the action alternative, the existing bridge would be replaced with a new, approximately 85-foot long, clear span bridge, with no pilings or piers in the stream channel. The proposed bridge would be compatible

with the historic and architectural characteristics of the historic district and would be funded by the Federal Lands Transportation Program (FLTP). This was the preferred alternative, and was approved in April 2014. (Note to self: This was the FONSI document date)

The objectives of the project were to:

- Maintain access across the Swiftcurrent Lake outlet to the Many Glacier developed area and Many Glacier Hotel.

- Maintain the historic character of the Many Glacier Hotel Historic District and minimize adverse impacts to historic properties to the extent possible.

- Address safety concerns associated with the severely deteriorated bridge, including non-code compliant utility lines.

The Swiftcurrent Bridge prior to its replacement, showing the non-code-compliant utility chase.

- Minimize adverse effects to natural resources and protect natural stream and floodplain processes.

As a part of the planning process, NPS personnel undertook a scoping process to identify the resources that may be affected by a project proposal, and to explore possible alternative ways to achieve the proposal while minimizing adverse impacts. A scoping brochure was distributed in early November of 2012 to inform the public of the proposal to replace the Swiftcurrent Bridge and to generate input on alternatives and resource concerns.

A press release was also distributed to media outlets, and the scoping brochure was mailed to individuals and organizations on the park's planning mailing list, including members of Congress and various federal, state, and local agencies. An email announcement was sent to a number of interested parties with a link to the brochure on the NPS Planning, Environment, and Public Comment (PEPC) website. The comment period closed on January 3, 2013.

In addition to considering the historic design of the original bridge and how the new bridge would fit into the environment, personnel looked at a number of other factors, including visitor use and experience, water resources, fisheries, and cultural landscapes. Impacts on wildlife, including grizzly bears, the Canada lynx, and the wolverine, were also inspected.

To lessen the impacts on park visitors, work on the bridge did not begin until late September 2014, after the Many Glacier Hotel and other concessions closed for the season, and proceeded through the first week of December. Work ceased during the winter months due to snowfall and cold temperatures, but picked up in the spring. The bridge had to be accessible when the Many Glacier Road opened to visitor traffic in the spring of 2015.

The four interior piers and existing abutments were removed; new abutments were constructed at the outer edges of the stream channel just beyond the position of the existing abutments. The new bridge was supported on deep foundations, which required the installation of piles. The new deck and abutments were pre-fabricated off site and hauled to the construction site.

The design for the new bridge deck matches the historic bridge width of 28 feet 8 inches. This width accommodates two 9-foot travel lanes, a 3-foot wide sidewalk, and a 5-foot wide bridle path, the same layout as the original bridge. The sidewalk and bridle path are separated from vehicle traffic with curbing. The new railings are of a similar design to the historic railings, but with modifications to height and baluster spacing to meet current safety codes.

To further protect the new bridge's abutments, riprap was placed at the new abutments to reduce the potential for ice scour and to protect the roadway embankments. The riprap was placed over a geotextile mat and

a thinner layer of smaller sized riprap to securely set the larger stones on the streambed. Limestone and smaller sized riprap was incorporated onto the larger riprap to visually tie it into the historic character and aesthetics of the surrounding landscape.

The Swiftcurrent River flows under the reconstructed bridge, downstream from Swiftcurrent Lake. Both the original and new bridge designs sought to lessen the appearance of the bridge as a dam on the river. (NPS photo by Gary MacFadden)